

Claims

1. An arm mechanism used for an industrial robot comprising:

an arm portion of which one-end side in a longitudinal direction is supported at a predetermined portion, while other-end side in the longitudinal direction is rotatable around a rotation axis elongating in the longitudinal direction with respect to said one-end side;

a driving portion, being apart from the rotation axis and disposed in said one-end side of said arm portion, in which a reduction gear is coupled to an output shaft of a driving motor;

a driven gear which is supported to be rotatable around the rotation axis, and connected to said other-end side of said arm portion;

a passing hole which is disposed along the rotation axis with passing through said driven gear in a manner such that said passing hole is opened to an outside of said one-end side of said arm portion so as to communicate with said other-end side of said arm portion; and

a scissors gear which is disposed on an output shaft of said reduction gear so as to mesh with said driven gear.

2. An arm mechanism for an industrial robot according to claim 1, wherein said scissors gear is configured by providing a form in which a main spur gear and a sub-spur gear that mesh with said driven gear, and that have a substantially same tooth shape overlap with each other, and urging said main spur gear and said sub-

spur gear by a spring in opposing turning directions,
said scissors gear comprises:

accommodating grooves that are recessed in overlapping faces through which said main spur gear and said sub-spur gear overlap with each other, respectively, that are opposingly placed, and that internally accommodate said spring;

spring receiving members which are fixed into said accommodating grooves, respectively, between which said spring is placed, and which hold a center of said spring in an elasticity direction with being coincident with positions of said overlapping faces; and

a gap portion which is disposed between inner walls of said accommodating grooves and said spring receiving members in a manner that expansion and contraction of said spring due to relative movement between said main spur gear and said sub-spur gear is allowed in a manner that said main spur gear and said sub-spur gear mesh with said driven gear.

3. An arm mechanism for an industrial robot according to claim 1 or 2, wherein said scissors gear is configured by providing a form in which a main spur gear and a sub-spur gear that mesh with said driven gear, and that have a substantially same tooth shape overlap with each other, and urging said main spur gear and said sub-spur gear by a spring in opposing turning directions,

said scissors gear comprises:

a slider which is disposed in a manner that said slider is fitted into one of said main spur gear and said sub-spur gear, and movement in the turning directions of another one of said main spur gear and said sub-spur gear

is allowed; and

an engaging member which engages with said main spur gear and said sub-spur gear via said slider in an overlapping manner.